DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Martin Fessenmaier on February 22, 2012.

The claims are amended as follows:

1. (Currently Amended) A plant comprising:

a feed gas separator;

an absorber having first and second vapor ports fluidly coupled to the feed gas separator to separately receive a first and a second portion of a feed gas vapor, and having first and second liquid ports fluidly coupled to the feed gas separator to separately receive a first and a second portion of a feed gas liquid, and further having first and second overhead ports fluidly coupled to a downstream distillation column to separately receive a first and a second portion of a downstream distillation column overhead;

wherein the absorber is further fluidly coupled to the downstream distillation column such that an absorber bottom product is fed to the downstream distillation column;

wherein the first portion of the feed gas vapor and the first portion of the distillation column overhead provide reflux to the absorber, and wherein the second portion of the distillation column overhead provides a vapor stream enriched in ethane for ethane re-absorption and stripping at a bottom portion of the absorber; and

a control unit ~~that controls~~ configured to adjust a ratio of the first and second portion of the feed gas vapor, the first and second portion of the feed gas liquid, and the first and second portion of the distillation column overhead such that ethane recovery is increased ~~as a function of a desired recovery rate of a feed gas component~~ in a bottom product of [[a]] the distillation column when the ratio of the first to the second portion of the feed gas vapor is increased, when the ratio of the first to the second portion of the feed gas liquid is increased, and when the ratio of the first to the second portion of the distillation column overhead is decreased.

2. (Currently Amended) The plant of claim 1 wherein the distillation column is configured to operate as at least one of a demethanizer and a deethanizer~~, and wherein the feed gas component in the bottom product is ethane~~.

6. (Currently Amended) The plant of claim 1 further comprising a feed gas exchanger that is configured to cool a feed gas using refrigeration content of ~~wherein~~

the second portion of the feed gas liquid ~~distillation column overhead is fed to the bottom of the absorber to thereby form a stripping gas stream~~.

9-10. (Canceled)

11. (Currently Amended) A method of operating a plant comprising:

providing an absorber and a downstream distillation column, wherein the absorber provides a bottom product to the distillation column;

splitting a liquid portion of an absorber feed stream into a first and second portion, and introducing the first and second portions of the liquid portion at different locations to the absorber;

feeding a first portion of a distillation column overhead to the absorber as a reflux and a second portion of the distillation column overhead as an ethane-enriched vapor stream to the absorber for ethane re-absorption and stripping at a bottom portion of the absorber;

~~using a flow ratio between the first and second portions of the distillation column overhead to control recovery of a desired product in a bottom product of the distillation column; and~~

splitting a vapor portion of the absorber feed stream into a first and second portion, and introducing the first and second portions of the vapor portion at different locations to the absorber, the first portion of the vapor portion introduced as reflux; and ~~and using a flow ratio between the first and second portions of the liquid portion of the~~

~~absorber feed stream, the distillation column overhead, and the vapor portion of the absorber feed stream to control recovery of the desired product in the bottom product of the distillation column~~

adjusting a ratio of the first and second portion of the vapor portion, the first and second portion of the liquid portion, and the first and second portion of the distillation column overhead such that ethane recovery is increased in a bottom product of the distillation column by increasing the ratio of the first to the second portion of the vapor portion, increasing the ratio of the first to the second portion of the liquid portion, and decreasing the ratio of the first to the second portion of the distillation column overhead.

15. (Canceled)

17-20. (Canceled)

Allowable Subject Matter

1. Claims 1-6, 11, 13, 14 and 16 are allowed.

2. The following is an examiner's statement of reasons for allowance:

The prior art does not anticipate nor render obvious the combination set forth in the independent claims, and specifically does not show adjusting the ratio of first and second portions of vapor feed, first and second portions of liquid feed, and first (reflux) and second (stripping gas) portions of a downstream column overhead, which are fed to an absorber and increasing ethane content in the column bottoms by increasing the

ratio of the first to second portions of the vapor and liquid feed and decreasing the ratio of the first to second portions of the column overhead. The closest prior art of record (Yao et al.; U.S. Pat. No. 6,116,050) discloses a controlled split vapor feed, a split liquid feed, and distillation column overhead as reflux but not adjusting the ratio of first and second portions of vapor feed, first and second portions of liquid feed, and first (reflux) and second (stripping gas) portions of a downstream column overhead, which are fed to an absorber and increasing ethane content in the column bottoms by increasing the ratio of the first to second portions of the vapor and liquid feed and decreasing the ratio of the first to second portions of the column overhead. Although it is well known to provide split feeds to an absorber, there is no teaching in the prior art of record that would, reasonably absent impermissible hindsight, motivate one having ordinary skill in the art to modify the teachings of the prior art to incorporate adjusting the ratio of first and second portions of vapor feed, first and second portions of liquid feed, and first (reflux) and second (stripping gas) portions of a downstream column overhead, which are fed to an absorber and increasing ethane content in the column bottoms by increasing the ratio of the first to second portions of the vapor and liquid feed and decreasing the ratio of the first to second portions of the column overhead. Thus, for at least the foregoing reasons, the prior art of record neither anticipates nor renders obvious the present invention as set forth in claims 1 and 11.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUKAS BALDRIDGE whose telephone number is 571-270-3782. The examiner can normally be reached on M-F 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Frantz Jules can be reached at 571-272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LUKAS BALDRIDGE/
Examiner, Art Unit 3784

/Frantz F. Jules/

Supervisory Patent Examiner, Art Unit 3784